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Serial No.: 09/915,791  
Attorney Docket No.: 10341-088

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Group Art Unit: 2834

Examiner: Jaydi A. Aguirrechea

Inventors: Jon Barry Joachim

Serial No.: 09/915,791

Filing Date: July 26, 2001

Title: Electric Machine Rotor with Crankshaft  
Torsional Damper

**DECLARATION OF  
INVENTOR  
UNDER 37 C.F.R. §1.131**

Commissioner for Patents  
U.S. Patent and Trademark Office  
Washington, DC 20231

Dear Sir:

I, Jon Barry Joachim, hereby declare that:

1. I am the inventor of the invention claimed and described in the above-identified application.

2. Prior to March 20, 2001, I conceived said invention in the subject application in the United States, as evidenced by the Invention Disclosure form (dates redacted) which is attached as Exhibit A.

3. Prior to March 20, 2001, I reduced to practice said invention in the subject application in the United States, as evidenced by the "Date of Completion" (date redacted) found in the Invention Disclosure form which is attached as Exhibit A.

3. Said Invention Disclosure form was completed and submitted prior to March 20, 2001.

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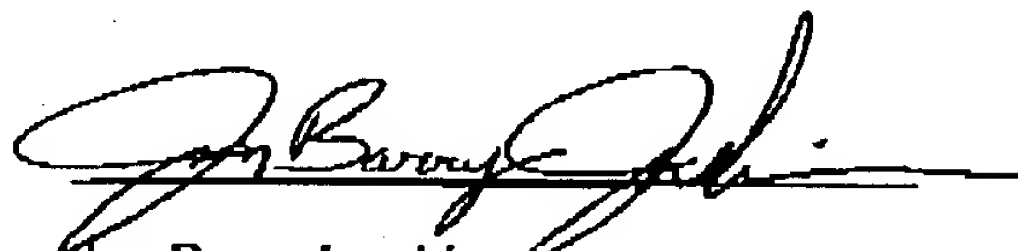
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Serial No.: 09/815,791  
Attorney Docket No.: 10541-058

4. That all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statement may jeopardize the validity of the above-identified application, and any patent issuing thereon or any patent to which this declaration is directed.

Dated:

16 - January - 2004



Jon Barry Joachim

P.01/03

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**Exhibit A**  
**OLID**Current owner company. [Change?](#)

Visteon

[OLID HOME](#) | [FGTI MAIN PAGE](#) |[DIRECTORY](#) | [FGTI](#) | [HUB](#)

Related Links: [View Invention Disclosure](#) | [Assign/Evaluate Disclosure](#) | [View Invention Ranking](#)

## Online Invention Disclosure: View Invention Disclosure

Inv. Discl. Docket No: 199-1994  
Creation Date:  
Approval to submit was given by: JJOACHIM:

### Section 1: INVENTION DESCRIPTION

Title of Invention: ELECTRIC MACHINE ROTOR WITH  
CRANKSHAFT TORSIONAL DAMPER  
Patent Evaluation Committee: SVETS  
CPSC Code: 03.05.08  
Originating Country Code: US  
Related Disclosure(s): None

### Section 2: PROBLEM & SOLUTION

Description or Comments: A starter/generator (s/g) rotor that incorporates the crankshaft (c/s) torsional damper. This rotor/damper assembly would be located on the front of the c/s - same as current damper pulleys and with similar attachment. The problem: present s/g concepts position the assembly between the engine and transmission - complicating assembly, service, maintenance, and typically requiring unique attaching parts. The solution: position the s/g on the front of the engine. Additionally, integrate the c/s damper into the rotor of the s/g - simplifying and reducing the number of parts. Current s/g concepts are generally located on the rear of the c/s between the engine and transmission - restricting access for installation and service and usually requiring additional features/components for installation. This position also complicates the interfaces with the engine, transmission and electronic controllers. By locating the s/g on the front of the engine, the "traditional" powertrain remains intact. By incorporating a damper into the s/g rotor assembly, the number of separate parts are reduced and simplified. The s/g may even be utilized by the engine

controller to alter/reduce powertrain NVH. The accessory drive remains or can be eliminated.

**Attachment:** See Section:9 ATTACHMENTS

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### Section 3: PRIOR ART

**Description or Comments:** Many found on front of crankshaft dampers (pulley) - none incorporating an electric machine rotor. WO9805882 - ISAD - showing a starter/generator with a damper in the assembly. ISAD concept has a spring type mechanical damper meant for isolation/control of gear rattle in transmission - not for crankshaft torsional vibration control.

**Attachment:** See Section:9 ATTACHMENTS

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### Section 4: NEW TECHNOLOGY

**Description or Comments:** The positioning of the starter/generator (s/g) on the front of the engine. The use of the s/g rotor as the active mass of the crankshaft (c/s) torsional damper (typically an accessory drive pulley (sheave) is the active mass.) The ensuing packaging advantages for the system comprising the s/g and the s/g controller, battery and the other accessory driven components (w/elimination of the front end accessory drive (fead)). A reduction in the complexity of the system interfaces associated with the s/g and powertrain and accessory drive components.

**Attachment:** See Section:9 ATTACHMENTS

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### Section 5: DETAILED DESCRIPTION

**Description or Comments:** With reference to attached paper sketches - starter/generator (s/g) rotor (1) fixedly attached to flange (2) by fasteners (6) forming active mass of rotor/damper assembly. Outer flange (2) fixedly attached to hub (4) through elastomeric element (3). Hub (4) attached to crankshaft (7) on pressfit (typical) bore by bolt(8). Note that rotor (1) attachment to outer flange (2) may be direct by pressfit or by bonding directly to elastomer (3).

**Attachment:** See Section:9 ATTACHMENTS

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### Section 6: DATES

**Record(s) of Completion:**

**Date of Completion:**

**First Production Use:**  
[Model and Date]

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### Section 7: CATEGORY QUESTIONS

**Invention Category:**

Mechanical

Category Questions do not exist or not answered.

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**Section 8: MISCELLANEOUS ITEMS****Is it a Government Contract?:**

No

**If yes, Government Contract Number:****Identify a government agreement, partnership, consortium, or other company involved with conception or first building of the invention:****If disclosed to non-Company personnel, identify recipient and date:****Section 9: ATTACHMENTS**

File Name Click on File Name to view and print it. Files submitted before Feb. '00 may be found in OLD & others in NEW	Description
9881rotchr.gif: <u>OLD</u>   <u>NEW</u>	Sketch of concept described.

**Section 10: INVENTORSHIP****CDS or Other Id:**

JJOACHIM

**Last Name:**

Joachim

**First Name:**

Jon

**Middle Name:**

Barry

**Employment Category:**

S

**Employment Status:**

A

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**Country Code:**

US

**Employee of:**

Ford Motor Company U

**Department:**

A612

**Organization Code:**

EL6440EEG

**Payroll Location Code:**

1239

**Office Address:**

FRL 3139 or VTC-AP 42A20

**Maildrop:**

1170

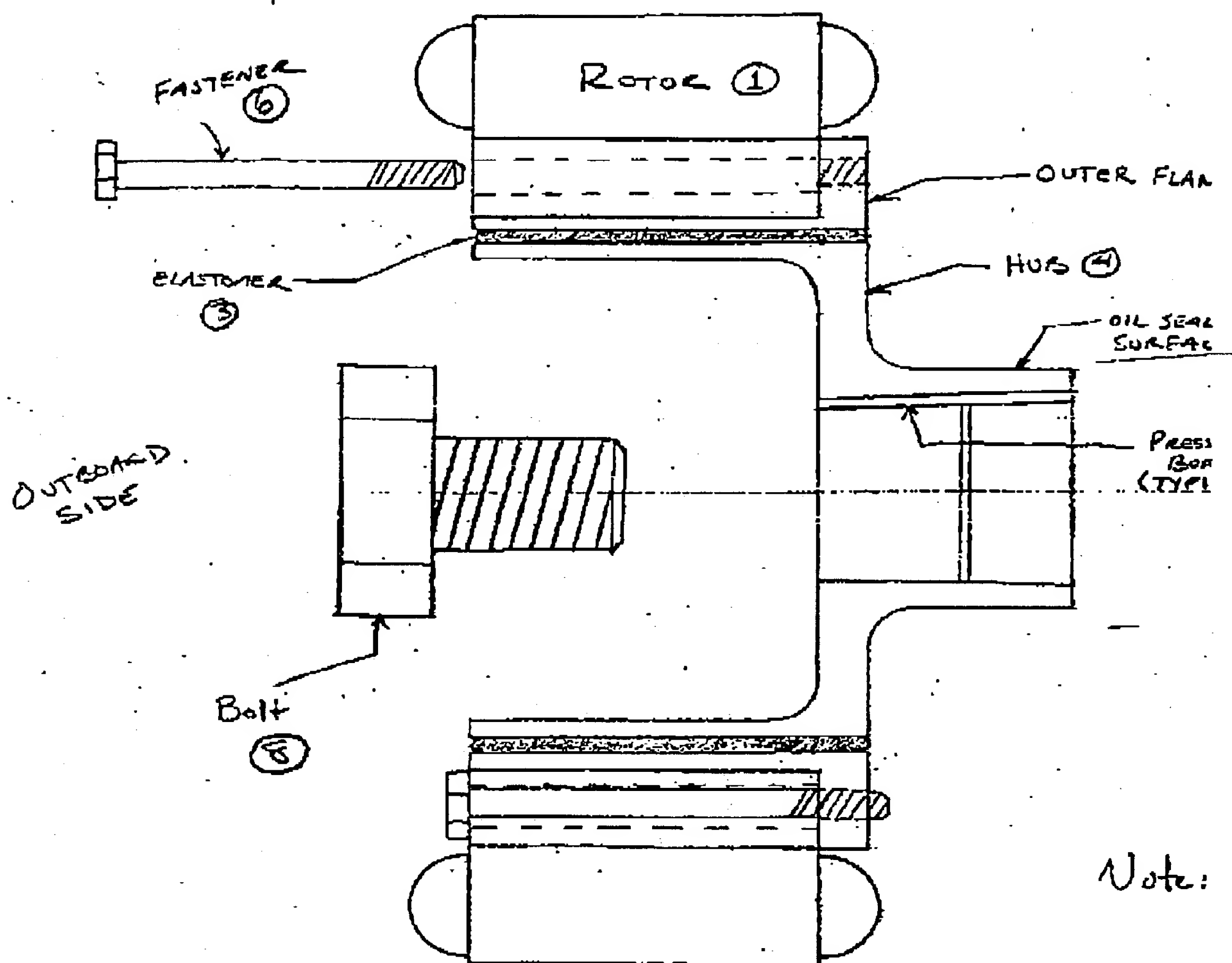
**Supervisor's CDS Id:**

RMOHAN

**Manager's CDS Id:**

PCHAPEKI

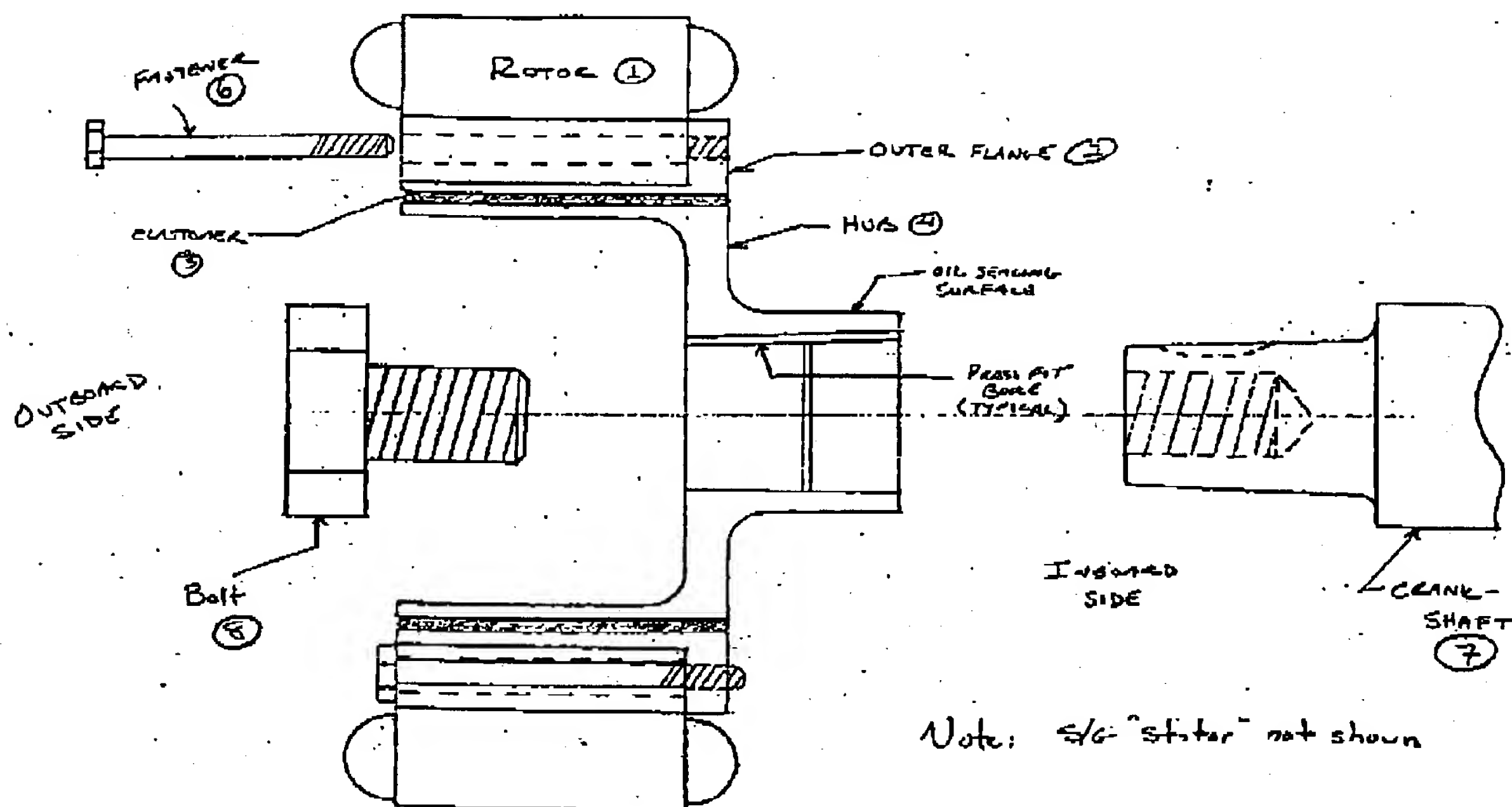
## S/G ROTOR W/ DAMPER CONC



Note:

OPTION: Increase rotor ID; Pressfit outer flange  
for assembly (vs. bolt on as shown)  
Attach FEAD pulley to outbd side if req.

## S/G ROTOR W/ DAMPER CONCEPT



OPTION: Increase rotor ID; Pressfit outer flange for assembly (vs. bolt on as shown)  
 Attach FEAD pulley to outboard side if req.

J. Joachim